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| APPLICATION NO.               | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------------|-------------|----------------------|---------------------|------------------|
| 10/559,093                    | 08/14/2006  | Masaaki Sako         | 87071               | 1451             |
| 22242                         | 7590        | 06/14/2007           | EXAMINER            |                  |
| FITCH EVEN TABIN AND FLANNERY |             |                      | KIM, TAE JUN        |                  |
| 120 SOUTH LA SALLE STREET     |             |                      |                     |                  |
| SUITE 1600                    |             |                      | ART UNIT            | PAPER NUMBER     |
| CHICAGO, IL 60603-3406        |             |                      | 3746                |                  |
| MAIL DATE                     |             | DELIVERY MODE        |                     |                  |
| 06/14/2007                    |             | PAPER                |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

|                              |                     |                  |
|------------------------------|---------------------|------------------|
| <b>Office Action Summary</b> | Application No.     | Applicant(s)     |
|                              | 10/559,093          | SAKO ET AL.      |
|                              | Examiner<br>Ted Kim | Art Unit<br>3746 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 06/04/2007.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-22 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 2,3,10,11,13 and 15-22 is/are allowed.  
 6) Claim(s) 1,4-9,12 and 14 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4-8, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prabhu (6,393,821) in view of any of JP 2002-202006, Kilmer (2002/0023628) and Fujimura et al (6,190,429). Prabhu teaches an electric power supply system comprising: a gas turbine 14; a gas collecting device 1 configured to collect a gas being generated, including from coal mines (see Fig. 1); a gas separating device 7, 8, 9, 10 configured to continuously separate the gas that is supplied from the gas collecting device and has a content of combustible component that varies with time, according to the content of combustible component contained in the gas; a calorie adjusting device configured to selectively mix gases from 7, 8, 9, 10 having different contents of the combustible component which are separated by the gas separating device to adjust the content of the combustible component of the gas to be supplied to the gas turbine; and a system control device 24 configured to control an operation of the gas turbine, and an operation of the calorie adjusting device (see col. 6, lines 45+; col. 8, lines 13-32; col. 7, lines 35-47); wherein the gas separating device includes a combustible component meter M configured

to continuously measure the content of the combustible component of the gas continuously collected by the gas collective device and to separate the gas based on measurement result of the combustible component meter M to supply the separated gases to different gas supply passages 7-10, a plurality of gas supply passages 7-10 through which the gases according to predetermined ranges of the content of the combustible component are supplied, and a passage-switching means (valves in 7-10) configured to select one of the plurality of gas supply passages based on measurement results from the combustible component meter and to perform switching to the selected gas supply passage; the calorie adjusting device includes a plurality of gas supply passages 7-10 to which gases separated according to the content of the combustible component by the gas separating device are supplied, a mixed gas supply passage with valve 34 to which the plurality of gas supply passages are connected, the mixed gas supply passage extending to the gas turbine, and opening and closing means (valves) configured to adjust open positions of the plurality of gas supply passages. Prabhu do not teach a gas engine operated with the gas engine and the system control device also controlling the gas engine. Note that applicant has admitted that using gas engines operating on coal mine gas is well known in the art in the background of the invention section, specifically referencing the JP 2002-202006. Further note that Prabhu specifically teaches enriching the combustible component with methane (col. 7, lines 34+) for startup and other times and thus the enriched gases can inherently be made combustible in gas engines. Kilmer teaches using low methane content fuel from coal mines in gas engines. Fujimura et al

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teach see front of the patent operating a power plant with both a gas engine and a gas turbine engine for generating electric power with low energy content gases. It would have been obvious to one of ordinary skill in the art to employ a gas engine controlled by the system control device, to operate on the low energy content gases derived from Prabhu. Fujimura et al also teach the heat recovery boiler connected to the gas turbine and the steam turbine connected to the boiler (col. 9, lines 9+). It would have been obvious to one of ordinary skill in the art to employ them to further recover the heat energy from the gas turbine exhaust. The system will inherently handle varying loads. Alternately, it would have been obvious to one of ordinary skill to vary the load based on the fuel content to the engines, as that is the limiting factor as to what load can be driven.

3. Claims 1, 4-9, 12, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prabhu (6,393,821) in view of any of JP 2002-202006, Kilmer (2002/0023628) and Fujimura et al (6,190,429), as applied above, and further in view of either Pont et al (2002/0148229) or JP 10-047626. The prior art teach various aspects of the claimed invention but do not teach the calorie adjusting device includes a feedback combustible component meter provided on the mixed gas supply passage, rather the combustible component meters M are provided at the chamber 1. Pont et al teach a negative feedback combustible component meter based on the energy content of the fuel (see abstract). JP 10-047626 teach a negative feedback combustible component meter (downstream of 5) based on the energy content of the fuel of the mixed gas from 5 where enriched gas is mixed with low energy gases to adjust the calorie content. It would have been obvious to

one of ordinary skill in the art to employ the negative feedback combustible component meter based on the energy content of the fuel in the mixed gas passage, in order to most accurately know the content before combustion.

***Allowable Subject Matter***

4. Claims 2, 3, 10, 11, 13, 15-22 are allowed.

***Response to Arguments***

5. Applicant's arguments filed 06/04/2007 have been fully considered but they are not persuasive. Applicant argues that Prabhu relies on separation of the mixture by a natural separation method as opposed to the forcible separation method. It is noted that the claims are to an apparatus vs. to a method and hence, as long as the apparatus meet the structural limitations of the claims, the claims are anticipated. Furthermore, even if giving the forcible separation method weight, the claimed device of Prabhu, while using the difference in specific gravity, also performs a forcible separation of the gases by using a controller 24 and valves to control when the various passages 7-10 are opened and thus forcibly separating the gases from each other. A purely natural separation method would not use any valves or a controller.

6. Applicant further argues that the Prabhu is "incapable of continuously separating the fuel gas whose combustible component content varies with time." This is not persuasive as it simply mischaracterizes the Prabhu device. On the contrary, Prabhu

"The apparatus and method described here provides a means to collect and use such gas for the production of electricity and useful heat in a turbine in a manner harmonious

with the environment. *The apparatus consists of a means for collecting such gas and allowing the gas concentrations to increase over time* (col. 4, lines 39-44)"

Clearly when the richest fuel gas is removed, then that changes the concentrations elsewhere in the system. The methane concentrations are taught at a given location as being "fairly" homogenous (col. 6, lines 12-14). There is no way these concentrations can always remain the same at a given location, based on the composition of the fuel entering the system can change over time, or that the fuel may accumulate over time and thus become concentrated. This is further borne out by the use of a vent 6 to reduce the concentration, which changes over time, that is too much for safety or other reasons (col. 7, lines 47-59). In addition, the fact that gas is being removed from the system, will tend to decrease the concentration. Hence, it is clear that the fuel concentration will vary over time at a given location and that the combustible component meter M will measure the concentrations continuously and the gas separating device and controller separates the gas based on the measurement result of the combustible component to supply the different gas supply passages 7-10.

Hence, the applied references clearly meet all the structural limitations of the device and perform or are capable of performing the claimed functions.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax number for the organization where this application is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg, can be reached at 571-272-4828. Alternate inquiries to Technology Center 3700 can be made via 571-272-3700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). General inquiries can also be directed to the

Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at <http://www.uspto.gov/main/patents.htm>



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June 10, 2007  
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